

# Leviathan Mine Superfund Site

U.S. Environmental Protection Agency • Region 9 • San Francisco, CA • February 2017

# **History and Timeline**

## **Background**

Leviathan Mine is an abandoned open-pit sulfur mine. The mine is located approximately 25 miles southeast of Lake Tahoe high on the eastern slope of the Sierra Nevada mountain range, in a remote portion of northeastern Alpine County, CA surrounded by national forest and private land. The acid mine drainage (AMD) from Leviathan Mine has historically contaminated a nine-mile stretch of the Leviathan-Bryant Creek watershed, impacting Leviathan, Aspen, and Bryant Creeks, as well as the East Fork Carson River. In 2000, the U.S. Environmental Protection Agency (EPA) added the mine and the impacted areas (the "Superfund site") to the National Priorities List (NPL). The NPL is the list of the most complex, uncontrolled hazardous waste sites throughout the United States that threaten public health and the environment.

The historical activities from the Leviathan Mine have created AMD, impacting the surrounding environment. Sulfuric acid is created when water (rainwater, snowmelt and subsurface water) interacts with rocks containing sulfur-bearing minerals. The resulting highly acidic water moves into the surrounding environment, such as the groundwater, surface water and soil, and may have harmful effects on humans, animals and plants.

Although a long-term cleanup plan has not been developed, early cleanup activities are being conducted to reduce the discharge of untreated AMD. In the mid-1980s, the Pollution Abatement Project began which included re-grading the site, building evaporation ponds, and channeling the creek. Interim treatment systems have greatly improved the water quality of the Leviathan-Bryant Creek watershed.

#### Acid Mine Drainage (AMD)

When highly acidic water that is rich in metals moves (or drains) out of a mined area into the environment

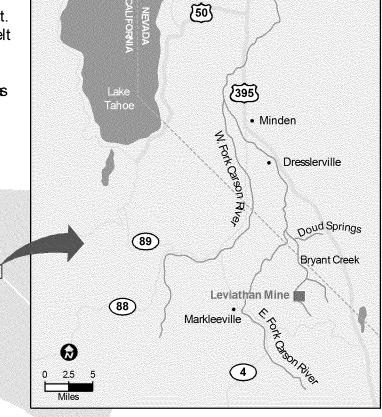


Figure 1: Leviathan Mine Superfund Site Location

# Timeline for the Leviathan Mine Superfund Site



Underground mining for copper



Inactive



Underground mining for sulfur

Open pit sulfur

in 1950's

mining by the Anaconda Company Atlantic Rich field Fish kills reported Company purchased

Anaconda

**USGS** Groundwater monitoring began ('82)

RWQCB acquired the site to address water quality ('84)

Benthic macroinvertebrate sampling begins ('95)

EPA and ARC Pond water treatment field studies Surface water monitoring begins ('97-'98)

Aspen Seep Bioreactor ('96 to present)



Pond water treatment system ('99 to present)



Supported by the

Washoe Tribe, EPA

added the site to the

**National Priorities** 

List (NPL)

Lime treatment system

High-density sludge treatment system ('09 to present)

RI/FS Ordered from EPA to ARC ('08) **Groundwater Wells** (08)

Workplans &



PARTECYALISM

Field Sampling ('09) **Groundwater Wells** 



Workplans & Field Sampling



Sampling

& Identify Gaps

July 2015

Results of

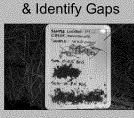
revegetation

efforts.

Workplans & Field Evaluate Data



Workplans & Field Sampling **Evaluate Data** 



**Early Interim** 

**Actions (Summary)** 

Evaluate Data & Identify Gaps\*\*

Sample & Resample to Fill Data Gaps\*\*



**Overall Schedule** 

Final RI/FS Report\*\*

Pollution

**Abatement** 

**Project** 

Proposed Plan\*\* Public Meeting\*\* Record of Decision\*\*

Remedial Design\*\*

**Treatment System Achievements 1999-2016** 

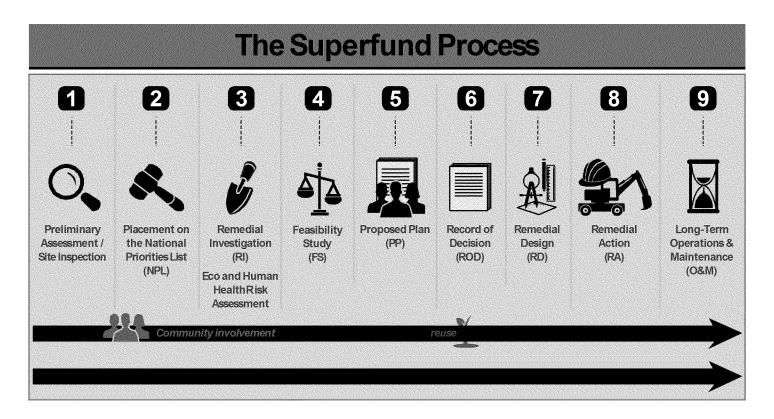
|                  | CA RWQCB    | ARC         | TOTAL       |         |
|------------------|-------------|-------------|-------------|---------|
| Water Treated    | 107,480,000 | 137,672,000 | 245,152,000 | Gallons |
| Aluminum Removed | 405,337     | 43,606      | 448,943     | Pounds  |
| Arsenic Removed  | 5,500       | 267         | 5,767       | Pounds  |
| Iron Removed     | 592,284     | 219,856     | 812,140     | Pounds  |
| Nickel Removed   | 6,466       | 1,031       | 7,497       | Pounds  |

#### Acronyms

RWQCB - California Regional Quality Control Board USGS - United States Geological Survey ARC - Atlantic Rich f ield Company

EPA – United States Environmental Protection Agency RI/FS - Remedial Investigation/Feasibility Study

\*\*Proposed Schedule



### Washoe Tribe of Nevada & California Role

EPA's Policy on Consultation and Coordination with Indian Tribes discusses EPA's responsibility to consult with tribes and consider their interests when taking action that may affect them or their resources. EPA works with the Washoe Tribe and provides funding through a cooperative agreement. The Washoe Tribe has given helpful comments on a number of site documents.

## For More Information

Visit one of the Information Repositories located at:

#### **Douglas County Library**

1625 Library Lane Minden, NV 89423 (775) 782-9841

#### **EPA Superfund Records Center**

95 Hawthorne St., 4th Floor San Francisco, CA 94105 (415) 536-2000 Talk with one of the EPA or Washoe Tribe of Nevada & California representatives:

#### Lynda Deschambault

U.S. EPA Remedial Project Manager (415) 947-4183 deschambault.lynda@apa.gov

#### Yolanda Sanchez

U.S. EPA Community Involvement Coordinator (415) 972-3880 sandhez.yolanda@epa.gov

#### Michelle Hochrein

Washoe Environmental Protection Department (775) 265-8689 michelle.hochrein@washoetribe.us

#### Gary Riley

U.S. EPA Remedial Project Manager (415) 972-3003 riley.gary@epa.gov

Be included on the Leviathan Mine Superfund site mailing list by contacting Yolanda Sanchez.

#### Websites:

Leviathan Mine Superfund Site – <a href="http://go.usa.gov/x9mf4">http://go.usa.gov/x9mf4</a>
April 2015 Site Updates Fact Sheet – <a href="http://go.usa.gov/x9mf2">http://go.usa.gov/x9mf2</a>

